

Complete Summary

GUIDELINE TITLE

Antithrombotic therapy for coronary artery disease: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy.

BIBLIOGRAPHIC SOURCE(S)

Harrington RA, Becker RC, Ezekowitz M, Meade TW, O'Connor CM, Vorchheimer DA, Guyatt GH. Antithrombotic therapy for coronary artery disease: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Chest 2004 Sep; 126(3 Suppl): 513S-48S. [164 references] [PubMed](#)

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Cairns JA, Theroux P, Lewis HD Jr, Ezekowitz M, Meade TW. Antithrombotic agents in coronary artery disease. Chest 2001 Jan; 119(1 Suppl): 228S-252S.

COMPLETE SUMMARY CONTENT

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 METHODOLOGY - including Rating Scheme and Cost Analysis
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 EVIDENCE SUPPORTING THE RECOMMENDATIONS
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SCOPE

DISEASE/CONDITION(S)

Coronary artery disease (CAD), including:

- Non-ST-elevation acute coronary syndromes (NSTE ACS)
- Acute myocardial infarction (MI)
- Chronic, stable coronary artery disease
- Congestive heart failure (CHF) with and without coronary artery disease

GUIDELINE CATEGORY

Management
Prevention
Treatment

CLINICAL SPECIALTY

Cardiology
Emergency Medicine
Family Practice
Internal Medicine
Pulmonary Medicine

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To provide evidence-based recommendations for the use of antithrombotic agents in the prevention and management of coronary artery disease

TARGET POPULATION

- Adults with coronary artery disease (CAD) (management and treatment)
 - Patients presenting with non-ST-segment elevation acute coronary syndromes (NSTEMI ACSs)
 - Patients with acute coronary syndromes post-myocardial infarction (MI)
 - Patients with chronic, stable coronary artery disease
 - Patients with congestive heart failure (CHF)
- Adults who have not been diagnosed with coronary artery disease but who are at least of moderate risk (primary prevention)

INTERVENTIONS AND PRACTICES CONSIDERED

Management/Treatment of Coronary Artery Disease (CAD)

1. Antiplatelet therapy
 - Aspirin
 - Thienopyridines (clopidogrel)
 - Glycoprotein (GP) IIb/IIIa inhibitors (eptifibatide or tirofiban)

Note: Abciximab was considered but not recommended for patients presenting with non-ST-segment elevation acute coronary syndrome (NSTEMI ACS), except when the coronary anatomy is known and percutaneous coronary intervention (PCI) is planned within 24 hr.

2. Anticoagulant therapy
 - Heparins

- Unfractionated heparin (UFH)
 - Low-molecular-weight-heparin (LMWH)
 - Vitamin K antagonist (VKA) (Warfarin)
3. Aspirin therapy in combination with anticoagulant therapy (heparin or warfarin)
 4. Tirofiban or eptifibatide in addition to aspirin and heparin
 5. Direct thrombin inhibitors (DTIs)

Notes:

- Dipyridamole was considered alone or in combination with aspirin for survivors of acute myocardial infarction but not recommended.
- These guidelines cover the broad topic of coronary artery disease with the exception of reperfusion therapies for ST-segment elevation acute myocardial infarction (AMI) and antithrombotic therapy for patients undergoing percutaneous coronary intervention.

Monitoring

1. Activated partial thromboplastin time
2. International normalized ratio (INR) levels
3. Troponin T or troponin I

Prevention of Coronary Artery Disease

1. Aspirin therapy
2. Warfarin therapy
3. Aspirin therapy in combination with warfarin therapy

MAJOR OUTCOMES CONSIDERED

Effectiveness and safety of antithrombotic agents in the prevention and management of coronary artery disease (CAD), as defined by:

- Health outcomes (such as death, myocardial infarction, reinfarction, stroke, pulmonary embolus, ischemia, major bleeding) of patients treated with antithrombotic agents to prevent or manage coronary artery disease
- Relative risk reduction (RRR) of adverse outcomes in patients treated with various antithrombotic agents for coronary artery disease

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
 Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Process of Searching for Evidence

Defining the clinical question provided the framework for formulating eligibility criteria that guided the search for relevant evidence. Prior to searching for the evidence, methodological experts and librarians reviewed each question to ensure that the librarians could derive a comprehensive search strategy.

In specifying eligibility criteria, authors not only identified patients, interventions, and outcomes, but also methodological criteria. For most therapeutic studies, authors restricted eligibility to randomized controlled trials (RCTs).

For many questions, RCTs did not provide sufficient data, and article authors also included observational studies. This was also true when randomized trials were not the most appropriate design to use for addressing the research question. In particular, randomized trials are not necessarily the best design to understand risk groups (e.g., the baseline or expected risk of a given event for certain subpopulations). Because there are no interventions examined in questions about prognosis, one replaces interventions by the exposure, which is time.

Identifying the Evidence

To identify the relevant evidence, a team of librarians at the University at Buffalo conducted comprehensive literature searches. For each question the authors provided, the librarians developed sensitive (but not specific) search strategies, including all languages, and conducted separate searches for systematic reviews, RCTs, and, if applicable, observational studies. The librarians searched the Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effectiveness and Cochrane Register of Controlled Trial, the ACP Journal Club, MEDLINE, and Embase for studies published between 1966 and June 2002 in any language. To filter MEDLINE and Embase search results for RCT evidence, the librarians used the search strategy developed by the Cochrane Collaboration (full strategy available in Appendix online at: http://www.chestjournal.org/content/vol126/3_suppl_1).

For observational studies, they restricted their searches to human studies. Searches were not further restricted in terms of methodology. While increasing the probability of identifying all published studies, this sensitive approach resulted in large number of citations for many of the defined clinical questions. Therefore, trained research assistants screened the citation list developed from the search and removed any apparently irrelevant citations. These irrelevant citations included press news, editorials, narrative reviews, single case reports, animal studies (any nonhuman studies), and letters to the editor. Authors included data from abstracts of recent meetings if reporting was transparent and all necessary data for the formulation of a recommendation were available. The guideline developers did not explicitly use Internet sources to search for research data.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

The rating scheme framework captures the trade-off between benefits and risks (1 or 2) (and the methodological quality of the underlying evidence (A, B, C+, or C). See "Rating Scheme for the Strength of the Recommendations."

METHODS USED TO ANALYZE THE EVIDENCE

Meta-Analysis of Randomized Controlled Trials
Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Summarizing Evidence

The electronic searches also included searching for systematic reviews. If authors were satisfied with a recent high-quality systematic review, evidence from that review provided a foundation for the relevant recommendation.

Pooled analyses from high-quality systematic reviews formed, wherever possible, the evidence base of the recommendations. Pooling offers the advantage of obtaining more precise estimates of treatment effects and allows for a greater generalizability of results. However, pooling also bears the risk of spurious generalization. In general, the summary estimates of interest were the different types of outcomes conveying benefit and downsides (i.e., risk, burden, and cost).

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Consensus Development Conference)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The strength of any recommendation depends on the following two factors: the trade-off between the benefits and the risks, burdens, and costs; and the strength of the methodology that leads to the treatment effect. The guideline developers grade the trade-off between benefits and risks in the two categories: 1, in which the trade-off is clear enough that most patients, despite differences in values, would make the same choice; and 2, in which the trade-off is less clear, and individual patients' values will likely lead to different choices.

When randomized trials provide precise estimates suggesting large treatment effects, and the risks and costs of therapy are small, treatment for average patients with compatible values and preferences can be confidently recommended.

If the balance between benefits and risks is in doubt, methodologically rigorous studies providing Grade A evidence and recommendations may still be weak (Grade 2). Uncertainty may come from less precise estimates of benefit, harm, or costs, or from small effect sizes.

There is an independent impact of validity and consistency, and the balance of positive and negative impacts of treatment on the strength of recommendations. In situations in which there is doubt about the value of the trade-off, any recommendation will be weaker, moving from Grade 1 to Grade 2.

Grade 1 recommendations can only be made when there is a relatively clear picture of both the benefits and the risks, burdens, and costs, and when the balance between the two clearly favors recommending or not recommending the intervention for the typical patient with compatible values and preferences. A number of factors can reduce the strength of a recommendation, moving it from Grade 1 to Grade 2. Uncertainty about a recommendation to treat may be introduced if the following conditions apply: (1) the target event that is trying to be prevented is less important (confident recommendations are more likely to be made to prevent death or stroke than asymptomatic deep vein thrombosis); (2) the magnitude of risk reduction in the overall group is small; (3) the probability of the target event is low in a particular subgroup of patients; (4) the estimate of the treatment effect is imprecise, as reflected in a wide confidence interval (CI) around the effect; (5) there is substantial potential harm associated with therapy; or (6) there is an expectation for a wide divergence in values even among average or typical patients. Higher costs would also lead to weaker recommendations to treat.

The more balanced the trade-off between benefits and risks, the greater the influence of individual patient values in decision making. Virtually all patients, if they understand the benefits and risks, will take aspirin after experiencing a myocardial infarction (MI) or will comply with prophylaxis to reduce the risk of thromboembolism after undergoing hip replacement. Thus, one way of thinking about a Grade 1 recommendation is that variability in patient values is unlikely to influence treatment choice in average or typical patients.

When the trade-off between benefits and risks is less clear, individual patient values may influence treatment decisions even among patients with average or typical preferences.

Grade 2 recommendations are those in which variation in patient values or individual physician values will often mandate different treatment choices, even among average or typical patients. An alternative, but similar, interpretation is that a Grade 2 recommendation suggests that clinicians conduct detailed conversations with patients to ensure that their ultimate recommendation is consistent with the patient's values.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grade of Recommendation	Clarity of Risk/Benefit	Methodological Strength of Supporting Evidence	Implications
1A	Clear	Randomized controlled trials (RCTs) without important limitations	Strong recommendation; can apply to most patients in most circumstances without reservation
1C+	Clear	No RCTs, but strong RCT results can be unequivocally extrapolated, or overwhelming evidence from observational studies	Strong recommendation; can apply to most patients in most circumstances
1B	Clear	RCTs with important limitations (inconsistent results, methodological flaws*)	Strong recommendation; likely to apply to most patients
1C	Clear	Observational studies	Intermediate-strength recommendation; may change when stronger evidence is available
2A	Unclear	RCTs without important limitations	Intermediate-strength recommendation; best action may differ depending on circumstances or patients' or societal values
2C+	Unclear	No RCTs, but strong RCT results can be	Weak recommendation; best action may

Grade of Recommendation	Clarity of Risk/Benefit	Methodological Strength of Supporting Evidence	Implications
		unequivocally extrapolated, or overwhelming evidence from observational studies	differ depending on circumstances or patients' or societal values
2B	Unclear	RCTs with important limitations (inconsistent results, methodological flaws*)	Weak recommendation; alternative approaches likely to be better for some patients under some circumstances
2C	Unclear	Observational studies	Very weak recommendation; other alternatives may be equally reasonable

*These situations include RCTs with both lack of blinding and subjective outcomes, where the risk of bias in measurement of outcomes is high, or RCTs with large loss to follow-up.

COST ANALYSIS

While conference participants agreed that recommendations should reflect economic considerations, incorporating costs is fraught with difficult challenges. For most recommendations, formal economic analyses are unavailable. Even when analyses are available, they may be methodologically weak or biased. Furthermore, costs differ radically across jurisdictions, and even sometimes across hospitals within jurisdictions.

Because of these challenges, the guideline developers consider economic factors only when the costs of one therapeutic option over another are substantially different within major jurisdictions in which clinicians make use of these recommendations. As a result, in jurisdictions in which resource constraints are severe, alternative allocations may serve the health of the public far better than some of the interventions that are designated as Grade 1A. This will likely be true for all less industrialized countries and, with the increasing promotion of expensive drugs with marginal benefits, may be increasingly true for wealthier nations. Furthermore, recommendations change (either in direction or with respect to grade) only when the guideline developers believe that costs are high

in relation to benefits. Instances in which costs have influenced recommendations are labeled in the "values and preferences" statements associated with the recommendation.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guideline authors formulated draft recommendations prior to the conference that served as the foundation for authors to work together and critique the recommendations. Drafts of all articles including draft recommendations were available for review during the conference. A representative of each article presented potentially controversial issues in their recommendations at plenary meetings. Article authors met to integrate feedback, to consider related recommendations in other articles, and to revise their own guidelines accordingly. Authors continued this process after the conference until they reached agreement within their groups and with other author groups who had provided critical feedback. Finally, the editors of this supplement harmonized the articles and resolved remaining disagreements through facilitated discussion.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The rating scheme is defined at the end of the "Major Recommendations" field.

Acute Management of Non-ST-Elevation Acute Coronary Syndromes (NSTEMI ACS)

Antiplatelet Therapies

Aspirin

1. For all patients presenting with an NSTEMI ACS, without a clear allergy to aspirin, the guideline developers recommend immediate aspirin, 75 to 325 mg orally (PO), and then daily oral aspirin, 75 to 162 mg (Grade 1A).

Thienopyridines

1. For all NSTEMI ACS patients with an aspirin allergy, the guideline developers recommend immediate treatment with clopidogrel, 300 mg oral bolus, followed by 75 mg/day indefinitely (Grade 1A).
2. In all NSTEMI ACS patients in whom diagnostic catheterization will be delayed or when coronary bypass surgery will not occur until >5 days following coronary angiography, the guideline developers recommend clopidogrel be administered immediately as bolus therapy (300 mg), followed by 75 mg/day for 9 to 12 months in addition to aspirin (Grade 1A).

Underlying values and preferences: This recommendation places a relatively high value on avoiding myocardial infarction (MI) and a relatively low value on avoiding major bleeding.

3. In NSTEMI ACS patients in whom angiography will take place rapidly (≤ 24 hours), the guideline developers suggest beginning clopidogrel after the coronary anatomy has been determined (Grade 2A).

Underlying values and preferences: This recommendation places a relatively high value on avoiding serious bleeding balanced against a low absolute benefit of clopidogrel in the first 24 hours of treatment.

4. For patients who have received clopidogrel and are scheduled for coronary bypass surgery, the guideline developers recommend discontinuing clopidogrel for 5 days prior to the scheduled surgery (Grade 2A).

Glycoprotein (GP) IIb/IIIa Inhibitors

1. In moderate- to high-risk patients presenting with NSTEMI ACS, the guideline developers recommend either eptifibatide or tirofiban for initial (early) treatment in addition to treatment with aspirin and heparin (Grade 1A). In these moderate- to high-risk patients who are also receiving clopidogrel, the guideline developers recommend eptifibatide or tirofiban as additional initial treatment (Grade 2A).
2. For patients presenting with NSTEMI ACS, the guideline developers recommend against abciximab as initial treatment except when the coronary anatomy is known and percutaneous coronary intervention (PCI) planned within 24 hours (Grade 1A).

Antithrombin Therapies

Unfractionated Heparin (UFH)

1. For patients presenting with NSTEMI ACS, the guideline developers recommend UFH over no heparin therapy for short-term use with antiplatelet therapies (Grade 1A). The guideline developers recommend weight-based dosing of UFH and maintenance of the activated partial thromboplastin time (aPTT) between 50 s and 75 s (Grade 1C+).

Low-Molecular-Weight Heparin (LMWH)

1. For the acute treatment of patients with NSTEMI ACS, the guideline developers recommend LMWHs over UFH (Grade 1B).
2. The guideline developers recommend against routine monitoring of the anticoagulant effect of the LMWHs (Grade 1C).
3. The guideline developers suggest continuing LMWHs during PCI treatment of the NSTEMI ACS patient when it has been started as the upstream anticoagulant (Grade 2C).
4. For patients receiving GP IIb/IIIa inhibitors as upstream treatment of NSTEMI ACS, the guideline developers suggest LMWH over UFH as the anticoagulant of choice (Grade 2B).

Direct Thrombin Inhibitors (DTIs)

1. In patients presenting with NSTEMI ACS, the guideline developers recommend against DTIs as routine initial antithrombin therapy (Grade 1B).

Underlying values and preferences: This recommendation acknowledges the limitations of the individual trials of DTIs in NSTEMI ACS as well as the complexities of using the DTIs compared with either UFH or LMWH.

Post MI and Post ACS

Antiplatelet Therapies

In patients with ACSs with and without ST-segment elevation:

1. The guideline developers recommend aspirin at initial doses from 160 to 325 mg, and then indefinite therapy, 75 to 162 mg/day (Grade 1A).
2. For patients with a history of aspirin-induced bleeding or with risk factors for bleeding, the guideline developers recommend lower doses (≤ 100 mg) of aspirin (Grade 1C+).
3. For patients in whom aspirin is contraindicated or not tolerated, the guideline developers recommend clopidogrel for long-term administration, 75 mg/day (Grade 1A).

Comparisons of Antiplatelet and Anticoagulant Therapy and/or Combinations of Aspirin and Warfarin Trials

1. In most health-care settings, for moderate- and low-risk patients with MI, the guideline developers recommend aspirin alone over oral vitamin K antagonists (VKAs) plus aspirin (Grade 2B).

Underlying values and preferences: This recommendation places a relatively low value on prevention of thromboembolism and a relatively high value on avoiding the inconvenience, expense, and bleeding associated with VKA therapy.

2. In health-care settings in which meticulous international normalized ratio (INR) monitoring is standard and routinely accessible, for both high- and low-risk patients after MI, the guideline developers recommend long-term (up to 4 years) high-intensity oral VKAs (target INR, 3.5; range 3.0 to 4.0) without concomitant aspirin or moderate-intensity oral VKAs (target INR, 2.5; range 2.0 to 3.0) with aspirin (both Grade 2B).
3. For high-risk patients with MI, including those with a large anterior MI, those with significant heart failure, those with intracardiac thrombus visible on echocardiography, and those with a history of a thromboembolic event, the guideline developers suggest the combined use of moderate-intensity (INR, 2.0 to 3.0) oral VKAs plus low-dose aspirin (≤ 100 mg/day) for 3 months after the MI (Grade 2A).

Chronic, Stable Coronary Artery Disease (CAD)

Antiplatelet Agents

1. For all patients with chronic stable CAD, the guideline developers recommend the administration of aspirin, 75 to 162 mg po (Grade 1A). The guideline developers suggest that aspirin be continued indefinitely (Grade 2C).
2. For patients with stable chronic coronary disease with a risk profile indicating a high likelihood of development of acute MI (AMI), the guideline developers suggest long-term therapy with clopidogrel in addition to aspirin (Grade 2C).

VKAs

1. For patients with chronic CAD without prior MI, the guideline developers suggest clinicians not use long-term oral VKAs (Grade 2C).

Congestive Heart Failure (CHF) With and Without CAD

VKA, Aspirin

1. In patients with CHF due to a nonischemic etiology, the guideline developers recommend against routine use of aspirin or oral VKAs (Grade 1B).
2. The guideline developers recommend that when otherwise indicated, patients receive aspirin whether or not they are receiving angiotensin-converting enzyme inhibitors (ACEIs) (Grade 1C+).

Primary Prevention

Aspirin, VKA, or Both

1. For patients with at least moderate risk for a coronary event (based on age and cardiac risk factor profile with a 10-year risk of a cardiac event of >10%), the guideline developers recommend aspirin, 75 to 162 mg/day, over either no antithrombotic therapy or VKAs (Grade 2A).
2. For patients at particularly high risk of events in whom INR can be monitored without difficulty, the guideline developers suggest low-dose VKAs with a target INR of approximately 1.5 (Grade 2A).

Definitions

Grade of Recommendation	Clarity of Risk/Benefit	Methodological Strength of Supporting Evidence	Implications
1A	Clear	Randomized controlled trials (RCTs) without important limitations	Strong recommendation; can apply to most patients in most circumstances without

Grade of Recommendation	Clarity of Risk/Benefit	Methodological Strength of Supporting Evidence	Implications
			reservation
1C+	Clear	No RCTs, but strong RCT results can be unequivocally extrapolated, or overwhelming evidence from observational studies	Strong recommendation; can apply to most patients in most circumstances
1B	Clear	RCTs with important limitations (inconsistent results, methodological flaws*)	Strong recommendation; likely to apply to most patients
1C	Clear	Observational studies	Intermediate-strength recommendation; may change when stronger evidence is available
2A	Unclear	RCTs without important limitations	Intermediate-strength recommendation; best action may differ depending on circumstances or patients' or societal values
2C+	Unclear	No RCTs, but strong RCT results can be unequivocally extrapolated, or overwhelming evidence from observational studies	Weak recommendation; best action may differ depending on circumstances or patients' or societal values

Grade of Recommendation	Clarity of Risk/Benefit	Methodological Strength of Supporting Evidence	Implications
2B	Unclear	RCTs with important limitations (inconsistent results, methodological flaws*)	Weak recommendation; alternative approaches likely to be better for some patients under some circumstances
2C	Unclear	Observational studies	Very weak recommendation; other alternatives may be equally reasonable

*These situations include RCTs with both lack of blinding and subjective outcomes, where the risk of bias in measurement of outcomes is high, or RCTs with large loss to follow-up.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate selection and management of antithrombotic agents may help reduce the incidence of coronary artery disease and cardiovascular related events, such as death, reinfarction, stroke, pulmonary embolus, and major bleeding.

POTENTIAL HARMS

Antithrombotic medications have the potential for adverse events and side effects, including major and fatal bleeding.

QUALIFYING STATEMENTS

Interpreting the Recommendations

Clinicians, third-party payers, institutional review committees, or the courts should not construe these guidelines in any way as absolute dictates. In general, anything other than a Grade 1A recommendation indicates that the article authors acknowledge that other interpretations of the evidence, and other clinical policies, may be reasonable and appropriate. Even Grade 1A recommendations will not apply to all circumstances and all patients. For instance, the guideline developers have been conservative in their considerations of cost and have seldom downgraded recommendations from Grade 1 to Grade 2 on the basis of expense. As a result, in jurisdictions in which resource constraints are severe, alternative allocations may serve the health of the public far better than some of the interventions that we designate Grade 1A. This will likely be true for all less industrialized countries and, with the increasing promotion of expensive drugs with marginal benefits, may be increasingly true for wealthier nations.

Similarly, following Grade 1A recommendations will at times not serve the best interests of patients with atypical values or preferences or of those whose risks differ markedly from those of the usual patient. For instance, consider patients who find anticoagulant therapy extremely aversive, either because it interferes with their lifestyle (e.g., prevents participation in contact sports) or because of the need for monitoring. Clinicians may reasonably conclude that following some Grade 1A recommendations for anticoagulation therapy for either group of patients will be a mistake. The same may be true for patients with particular comorbidities (e.g., a recent gastrointestinal bleed or a balance disorder with repeated falls) or other special circumstances (e.g., very advanced age) that put them at unusual risk.

The guideline developers trust that these observations convey their acknowledgment that no recommendations or clinical practice guidelines can take into account the often compelling and unique features of individual clinical circumstances. No clinician, and no body charged with evaluating a clinician's actions, should attempt to apply our recommendations in a rote or blanket fashion.

Limitations of Guideline Development Methods

The limitations of these guidelines include the possibility that some authors followed this methodology more closely than others, although the development process was centralized and supervised by the editors. Second, it is possible that the guideline developers missed relevant studies despite the comprehensive searching process. Third, the guideline developers did not centralize the methodological evaluation of all studies to facilitate uniformity in the validity assessments of the research incorporated into these guidelines. Fourth, if high-quality meta-analyses were unavailable, the guideline developers did not statistically pool primary study results using meta-analysis. Finally, sparse data on

patient preferences and values, resources, and other costs represent additional limitations that are inherent to most guideline development methods.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Guideline Implementation Strategies

A full review of implementation strategies for practice guidelines is provided in the companion document titled "Antithrombotic and Antithrombolytic Therapy: From Evidence to Application." The review suggests that there are few implementation strategies that are of unequivocal, consistent benefit, and that are clearly and consistently worth resource investment. The following is a summary of the recommendations (see "Major Recommendations" for a definition of the recommendation grades).

To encourage uptake of guidelines, the guideline developers recommend that appreciable resources be devoted to distribution of educational material (Grade 2B).

They also suggest that:

- Few resources be devoted to educational meetings (Grade 2B)
- Few resources be devoted to educational outreach visits (Grade 2A)
- Appreciable resources be devoted to computer reminders (Grade 2A)
- Appreciable resources be devoted to patient-mediated interventions to encourage uptake of the guidelines (Grade 2B)
- Few resources be devoted to audit and feedback (Grade 2B)

IMPLEMENTATION TOOLS

Patient Resources
Personal Digital Assistant (PDA) Downloads
Quick Reference Guides/Physician Guides
Resources
Slide Presentation
Tool Kits

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Harrington RA, Becker RC, Ezekowitz M, Meade TW, O'Connor CM, Vorchheimer DA, Guyatt GH. Antithrombotic therapy for coronary artery disease: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Chest 2004 Sep;126(3 Suppl):513S-48S. [164 references] [PubMed](#)

ADAPTATION

Not applicable: The guideline was not adapted from another source.

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2001 Jan (revised 2004 Sep)

GUIDELINE DEVELOPER(S)

American College of Chest Physicians - Medical Specialty Society

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GUIDELINE STATUS

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This guideline updates a previous version: Cairns JA, Theroux P, Lewis HD Jr, Ezekowitz M, Meade TW. Antithrombotic agents in coronary artery disease. *Chest* 2001 Jan; 119(1 Suppl):228S-252S.

GUIDELINE AVAILABILITY

Electronic copies: Available from the [Chest - The Cardiopulmonary and Critical Care Journal](#).

Print copies: Available from the American College of Chest Physicians, Products and Registration Division, 3300 Dundee Road, Northbrook IL 60062-2348.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Evidence-based guidelines. Northbrook, IL: ACCP, 2004 Sep.
- Methodology for guideline development for the Seventh American College of Chest Physicians Conference on Antithrombotic and Thrombolytic Therapy. Northbrook, IL: ACCP, 2004 Sep.
- Applying the grades of recommendation for antithrombotic and thrombolytic therapy: The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Northbrook, IL: ACCP, 2004 Sep.
- Hemorrhagic complications of anticoagulant treatment: The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Northbrook, IL: ACCP, 2004 Sep.
- Antithrombotic and thrombolytic therapy: from evidence to application: The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Northbrook, IL: ACCP, 2004 Sep.
- Platelet-active drugs: the relationships among dose, effectiveness, and side effects: The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Northbrook, IL: ACCP, 2004 Sep.

Electronic copies: Available from the [Chest - The Cardiopulmonary and Critical Care Journal Web site](#).

Print copies: Available from the American College of Chest Physicians (ACCP), Products and Registration Division, 3300 Dundee Road, Northbrook IL 60062-2348.

The following is also available:

- Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy: Evidence-based guidelines; quick reference guide. Northbrook, IL: ACCP, 2004 Sep. Personal Digital Assistant (PDA) download available at [ACCP Web site](#).

Additional implementation tools are also available:

- Clinical resource: antithrombotic and thrombolytic therapy. Northbrook, IL. ACCP, 2004. Ordering information: Available from the [ACCP Web site](#).

PATIENT RESOURCES

The following is available:

- A patient's guide to antithrombotic and thrombolytic therapy. In: Clinical resource: antithrombotic and thrombolytic therapy. Northbrook (IL): American College of Chest Physicians (ACCP). 2004.

Ordering information is available from the [ACCP Web site](#).

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